

**IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA**

DAVID H. PEASE, III and LISA PEASE,	:	CIVIL ACTION NO. 4:10-CV-00843
	:	
	:	(Judge Conner)
Plaintiffs	:	
	:	
v.	:	
	:	
LYCOMING ENGINES,	:	
	:	
Defendant	:	

MEMORANDUM

Plaintiffs, David H. Pease III (“Mr. Pease”) and Lisa Pease (“Mrs. Pease”) (collectively, “the Peases”), bring this diversity action against defendant Lycoming Engines, Inc. (“Lycoming”). Presently before the court are two motions for summary judgment (Docs. 52, 67) and two motions to exclude expert testimony (Docs. 65, 66) filed by Lycoming.

I. Factual Background and Procedural History

A. Factual Background

On June 5, 2005, Mr. Pease was flying from Asheville, North Carolina, to Cincinnati, Ohio, in a Piper PA-32R-301T aircraft (the “Piper aircraft”). (Doc. 68 ¶ 1; Doc. 117 ¶ 1). During this flight, Mr. Pease’s aircraft experienced an engine failure and crashed near Tazewell, Tennessee. (*Id.*) Mr. Pease suffered significant injuries as a result of the crash. The instant litigation is a diversity jurisdiction products liability action concerning the Piper aircraft’s six-cylinder turbocharged Lycoming TIO-540-AH1A engine (the “AH1A engine”) designed and manufactured by Lycoming. (Doc. 68 ¶¶ 4, 8; Doc. 117 ¶¶ 4, 8).

On June 25, 1997, the Federal Aviation Administration (the “FAA”) approved the AH1A engine’s type design and added the AH1A engine to Type Certificate E14EA.¹ (Doc. 53 ¶ 1; Doc. 90 ¶ 1). Type Certificate E14EA certifies that the AH1A engine “meets the airworthiness requirements of Part 13/33 of the Federal Aviation Regulations” and all other “applicable portions of the Civil Air Regulations/Federal Aviation Regulations provided it is installed, operated, and maintained” properly. (Doc. 53 ¶ 3; Doc. 90 ¶ 3; Doc. 54, Ex. 1, at 1, 4). The parties generally agree that inadequate oil circulation damaged the AH1A engine’s internal components, but disagree about the cause.

A thumbnail sketch of the operation of an AH1A engine is essential background information. The AH1A engine contains six cylinders and a turbocharger. (Doc. 68 ¶ 8; 117 ¶ 8). Combustion within the cylinders forces pistons down the cylinder barrels. (Doc. 68 ¶ 9; 117 ¶ 9). Connecting rods clamped to crankpin journals on the crankshaft affix to each piston. (*Id.*) The force of the pistons moving down the six cylinders travels through the connecting rods and crankshaft, thereby rotating the propeller. (*Id.*) The crankcase halves support various components of the engine, including the six cylinders and the crankshaft.²

¹ A product’s type design includes, *inter alia*, drawings and specifications, information on dimensions, materials, and processes, and any other data necessary to ensure airworthiness. 14 C.F.R. § 21.31.

² As one of Lycoming’s experts noted in a report following the accident, “[t]he crankshaft has a series of main journals on the centerline and six crankpin journals, one for each connecting rod. The main and rod journals are joined by cheeks, which are an integral part of the forged crankshaft. The main bearings are

(Doc. 68 ¶ 10; Doc. 117 ¶ 10). The crankshaft itself is supported during engine operation by five sets of main bearings seated within crankcase bearing supports. (Doc. 68 ¶ 12; Doc. 117 ¶ 12).

Lubrication is key to the proper operation of the engine, its pistons, and the crankshaft. Oil travels through the case valves to the main journal bearings to provide pressurized lubrication to the crankshaft. (Doc. 68 ¶ 14; Doc. 117 ¶ 14). The oil flows from the main journal bearings to the connecting rod journals through drilled passages in the crankshaft. (Id.)

The turbocharger mounts on the engine.³ (Id.) An external hose connected to the rear case supplies the turbocharger with oil. (Id.) Oil enters from the top of the turbocharger to lubricate the internal moving parts. (Doc. 68 ¶ 15; Doc. 117 ¶ 15). This oil exits through the turbocharger at the bottom of the unit, entering the oil drain tank through a tube structure. (Doc. 68 ¶¶ 15-16; Doc. 117 ¶¶ 15-16). The oil flows from the oil drain tank to the rear case. (Doc. 68 ¶ 15; Doc. 117 ¶ 15).

According to the pleadings, the design defect involves the tube, which is designed to support the oil drain tank and to transfer spent oil from the turbocharger to the oil drain tank. (See Doc. 109, Ex. 2, at 29). The Peases claim that

numbered one through five” (Doc. 69, Ex. 3, at 1).

³ The turbocharger contains a turbine wheel driven by engine exhaust gases. (Doc. 68 ¶ 15).

[t]he tube on the oil drain tank failed due to the overhung load and the engine vibration. Then the oil leaked out of the drain tank tube, depleting the engine of oil. Following the starvation of oil, the turbocharger failed and the turbine wheel exited the turbocharger and the tailpipe.

(Doc. 117 ¶ 41 (citation and quotations omitted)). The Peases allege that the leak can be traced to a fracture in the drain tube that developed over a period of time—i.e. a fatigue fracture. (Doc. 117 ¶ 41). Lycoming contends that the fracture occurred as a result of the crash itself—i.e. an overload fracture—and did not cause the leak. (Doc. 68 ¶ 19).

Each party proffers expert testimony in support of their respective positions. One of the Peases' experts, Colin Sommer ("Sommer"), testified that "the material on the surface of the fracture on the flange is heavily smeared" and that the fracture "has a shiny appearance, [indicative of] some metal-to-metal contact, some smearing of metal that occurred . . . from the tank to the flange." (Doc. 109, Ex. 2, at 43). Sommer noted in his Rule 26 report that this "cannot occur during a single overload event and can only be the result of an in-flight failure of the weld resulting in the loss of oil from the engine." (Doc. 116, Ex. 11, at 8). The Peases' other expert, Douglas Herlihy ("Herlihy"), opined that fatigue failure is readily apparent from the presence of oil cooked and burned onto the flange outside of the oil drain pipe. (Doc. 111, Ex. 2, at 163).

In contrast, one of Lycoming's experts, Gary J. Fowler, Ph.D ("Fowler"), concluded that there is no "metallurgical evidence to indicate separation by a fatigue mechanism due to engine vibration" or "evidence of a progressive fracture

mechanism on the flange.” (Doc. 69, Ex. 3, at 5). Fowler observed that the fracture is on a slant and exhibits dimple rupture, which clearly demonstrates that overload failure caused the fracture. (*Id.* at 4-5). He also stressed that a scanning electron microscope (“SEM”) examination of the fracture surface failed to demonstrate any crack expansion caused by fatigue. (*Id.* at 5).

B. Procedural History

On April 20, 2007, the Peases filed suit against Lycoming and fourteen other defendants in the United States District Court for the Middle District of Alabama. (Docs. 1-2). On April 19, 2010, the United States District Court for the Middle District of Alabama granted the Peases’ motion to transfer venue and transferred the action to the United States District Court for the Middle District of Pennsylvania. (Doc. 11-3). The matter was reassigned to the undersigned on December 22, 2010. On December 29, 2010, the Peases filed an amended complaint against Lycoming. (Doc. 46). The Peases list six counts in their amended complaint: violation of Civil Air Regulation (“CAR”) Part 13, *et seq.*, Aircraft Engine Airworthiness (Count I); violation of Federal Aviation Regulation (“FAR”) §§ 21.3 and 145.21 (Count II); violation of FAR Part 33 *et seq.* (Count III); reckless and careless conduct (Count IV); punitive conduct (Count V); and loss of consortium by Mrs. Pease (Count VI). (Doc. 46).

Lycoming filed two motions for summary judgment. (Docs. 52, 67). In its first motion (Doc. 52), Lycoming seeks summary judgment on federal preemption grounds, and in its second motion (Doc. 67), Lycoming seeks summary judgment

pursuant to the Tennessee Products Liability Act of 1978 (“TPLA”).⁴ Lycoming also moves to exclude the testimony of the Peases’ liability experts, Colin A. Sommer and Douglas R. Herlihy. (Docs. 65, 66). Each of these motions is ripe for disposition.

II. Applicable Standards of Review

A. Motion to Exclude Expert Witness

Admissibility of expert testimony is a question of law governed by Federal Rule of Evidence 702. See Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 588-89 (1993). The rule provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

FED. R. EVID. 702; see also Calhoun v. Yamaha Motor Corp., U.S.A., 350 F.3d 316, 321 (3d Cir. 2003) (explaining that the Rule 702 requirements constitute “the ‘trilogy of restrictions on expert testimony: qualification, reliability and fit’” (quoting Schneider v. Fried, 320 F.3d 396, 405 (3d Cir. 2003))). The trial judge acts as a “gatekeeper,” charged with excluding unreliable expert testimony. See Calhoun, 350 F.3d at 321. Nonetheless, Rule 702 embraces a “liberal policy of admissibility,” under which it is preferable to admit any evidence that may assist the trier of fact.

⁴ By memorandum and order dated March 11, 2011, the court concluded that Tennessee law applies to the Peases’ claims. (Doc. 107).

Pineda v. Ford Motor Co., 520 F.3d 237, 243 (3d Cir. 2008) (quoting Kannankeril v. Terminix Int'l, Inc., 128 F.3d 802, 806 (3d Cir. 1997)).

B. Motion for Summary Judgment

Through summary adjudication the court may dispose of those claims that do not present a “genuine issue as to any material fact” and for which a jury trial would be an empty and unnecessary formality. See FED. R. CIV. P. 56(a). Once the moving party demonstrates that there are no genuine issues of material fact, the burden shifts to the non-moving party to come forth with “affirmative evidence, beyond the allegations of the pleadings,” in support of its right to relief. Pappas v. City of Lebanon, 331 F. Supp. 2d 311, 315 (M.D. Pa. 2004); see also Celotex Corp. v. Catrett, 477 U.S. 317, 322-23 (1986). This evidence must be adequate, as a matter of law, to sustain a judgment in favor of the non-moving party on the claims. See Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 250-57 (1986); Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 587-89 (1986); see also FED. R. CIV. P. 56(a). Only if this threshold is met may the cause of action proceed. Pappas, 331 F. Supp. 2d at 315.

III. Discussion

The court will first address the motions to exclude the expert testimony of Colin Sommer and Douglas Herlihy. (Docs. 65, 66). Then the court will address Lycoming’s motions for summary judgment (Docs. 52, 67). For the reasons that follow, the court will deny the motions to exclude expert testimony, grant in part and deny in part Lycoming’s motion for summary judgment on federal preemption

grounds, and deny Lycoming's motion for summary judgment pursuant to the TPLA.

A. Motions to Exclude Expert Testimony⁵

Lycoming contends that the expert testimony of both Sommer and Herlihy should be excluded. (See Docs. 65, 66). For the reasons stated below, the court holds that the expert testimony of Sommer and Herlihy is admissible.

1. Mr. Colin Sommer⁶

Lycoming seeks to prevent the admission of Sommer's testimony on two grounds. First, Lycoming attacks Sommer's qualifications. (Doc. 81, 7-14, 19). Second, Lycoming argues that Sommer employed an unreliable method in analyzing the cause of the crash. (Id. at 14-20).

⁵ Neither party has requested an evidentiary hearing on Lycoming's motions to exclude expert testimony. The Supreme Court in Kumho Tire Co. v. Carmichael noted that "[t]he trial court must have the same kind of latitude in deciding how to test an expert's reliability, and to decide whether or when special briefing or other proceedings are needed to investigate reliability, as it enjoys when it decides whether or not that expert's relevant testimony is reliable." 526 U.S. 137, 152 (1999) (emphasis omitted). A trial court need not hold an evidentiary hearing in order to meet the dictates of Daubert. See Oddi v. Ford Motor Co., 234 F.3d 136, 151-55 (3d Cir. 2000). In the instant case, the court finds that there is an ample factual record upon which to determine the reliability of the experts. The parties have thoroughly briefed the issues of admissibility and the experts have explained in detail their methodologies in their deposition testimony, Rule 26 Reports and other court filings.

⁶ The opinions Sommer intends to offer at trial can be found on pages nineteen and twenty of his deposition. (See Doc. 109, Ex. 2, at 19-20).

a. **Qualifications**

A witness may proffer an expert opinion only if he or she draws on some specialized “knowledge, skill, experience, training, or education” to formulate that opinion. FED. R. EVID. 702. The Third Circuit has construed this requirement liberally holding that a “broad range of knowledge, skills, and training qualify an expert as such.” In re Paoli R.R. Yard Pcb Litig., 35 F.3d 717, 741 (3d Cir. 1994). The Third Circuit has eschewed imposing “overly rigorous requirements of expertise and [has] been satisfied with more generalized qualifications.” Id.; see also Hammond v. Intern’l Harvester Co., 691 F.2d 646, 653 (3d Cir. 1982) (holding that an expert who sold automotive and mechanical equipment and taught automobile repair to high school students could testify in a products liability action despite a lack of formal education in engineering or physics); Knight v. Otis Elevator Co., 596 F.2d 84, 87-88 (3d Cir. 1979).

Lycoming contends that Sommer lacks the necessary qualifications or experience to offer expert testimony in this case. (See Doc. 81, at 7-14, 19). Lycoming asserts that Sommer is unqualified to offer expert testimony on “good manufacturing practice” or proffer testimony relating to design, manufacture, or certification of aircraft engines because he has never worked in manufacturing, designed an aircraft engine, or worked on any aspect of aircraft engine certification. (Id. at 7). Similarly, Lycoming argues that Sommer lacks the necessary qualifications to offer an opinion on the fracture because he is not a metallurgist. (Id. at 19).

Sommer's credentials are as follows. Sommer graduated with a degree in civil engineering with an emphasis on structural design from the University of Michigan in 1997. (Doc. 65, Ex. 1, at 14). At the end of 2002, Sommer joined his father's aviation consulting firm, Aeroscope, Inc. (Id. at 18). Sommer participated in a National Transportation Safety Board aircraft accident investigation course in 2004 and a University of Southern California aircraft accident investigation course in 2005. (Id. at 14-15). In 2010, Sommer attended the Teledyne Continental Motors Aviation Technician Advanced Training Program, which covered the maintenance practices and system failures of turbocharged aircraft engines similar to the AH1A engine found in Mr. Pease's Piper aircraft. (Doc. 109, Ex. 1 ¶ 12). As a licensed professional engineer in Michigan and Colorado, Sommer has extensive knowledge of structural design and internal component attachments. (Id. ¶ 2, 13). Sommer is a certified pilot of single engine aircrafts and has investigated over 300 accidents involving fixed-wing aircraft and rotorcraft.⁷ (Id. ¶ 3, 13). In the course of these investigations, Sommer determines whether the pilot, owner, operator, mechanics, and manufacturer have complied with the Federal Aviation Regulations. (Id.)

Lycoming's contentions about Sommer's lack of experience in manufacturing or metallurgy impact only the weight of Sommer's testimony, not its admissibility. Third Circuit case law unequivocally holds that generalized qualifications are sufficient to meet the requirements of Rule 702. See, e.g., Pineda,

⁷ The FAA requires pilots to familiarize themselves with various Federal Aviation Regulations. (Id. ¶ 13).

520 F.3d at 245 (holding that the district court abused its discretion by excluding the expert even though the expert may not have been the “best qualified expert or did not have the specialization that the [d]istrict [c]ourt deemed necessary.” (quotations omitted)). Sommer’s academic background and real-world experiences as a trained engineer and accident investigator render him more than qualified to testify as an expert on good manufacturing practices, the nature of the fracture, and the design, certification and manufacture of aircraft engines.

b. Reliability

Expert testimony is considered reliable when it is based upon sound methodology and technique. See id. at 247; In re Paoli, 35 F.3d at 744 (noting that a court’s proper focus is not the conclusions of the expert but the principles and methodology utilized). Daubert counsels a flexible approach based upon an analysis of factors that are neither exhaustive nor definitive. See Kumho Tire Co. v. Carmichael, 526 U.S. 137, 158 (1999). The court considers several factors in evaluating the reliability of an expert witnesses methodology, such as:

(1) whether a method consists of a testable hypothesis; (2) whether the method has been subjected to peer review; (3) the known or potential rate of error; (4) the existence and maintenance of standards controlling the technique’s operation; (5) whether the method is generally accepted; (6) the relationship of the technique to methods which have been established to be reliable; (7) the qualifications of the expert witness testifying based on the methodology; and (8) the non-judicial uses to which the method has been put.

In re Paoli, 35 F.3d at 742 n.8 (listing the factors deemed important by the Third Circuit and Supreme Court). The court is mindful, however, that “[t]he evidentiary

requirement of reliability is lower than the merits standard of correctness.” Id. at 744. Thus, the party proffering the expert need only establish by a preponderance of the evidence that the expert’s opinion rests upon “good grounds.” See Kannankeril, 128 F.3d at 807 (citation omitted); In re Paoli, 35 F.3d at 744-45 (stating that a judge may decide expert testimony has “good grounds” for a conclusion “even if the judge thinks that there are better grounds for some alternative conclusion, and “even if the judge thinks that a scientist’s methodology has some flaws such that if they had been corrected, the scientist would have reached a different result.”). In other words, when evaluating the admissibility of expert testimony, the court need not conclude “a particular scientific opinion has the best foundation, or even [that] the opinion is supported by the best methodology or unassailable research.” In re TMI Litig., 193 F.3d 613, 665 (3d Cir. 1999) (citation omitted).

Lycoming argues that Sommer’s testimony should be excluded because he failed to provide any scientific methodology to support his conclusions. (Doc. 81, at 14, 19). Specifically, Lycoming contends that Sommer failed to test two of his hypotheses concerning the cause of the plane crash: (1) that a metal fracture of the drain tank tube caused by overstress resulted in engine power loss and (2) “that torsional oscillation of the crankshaft (torsional vibration) is critical to turbocharger drain tank overstress.” (Doc. 81, at 17-18). Lycoming claims that Sommer failed to, *inter alia*, measure stresses that would occur during flight, determine any potential stressors on the drain tank like “stead state overload or fatigue caused by

vibration,” or “make any attempt to show a positive correlation between crankshaft torsional vibration and vibratory modes causing overstress in the drain can during specific engine conditions.” (Id. at 17-18).

The court holds Sommer’s opinions are supported by reliable methodology and general engineering principles. Sommer ruled out potential causes for the engine failure and crash by using a differential diagnosis approach.⁸ (Doc. 109, Ex. 1 ¶¶ 8-9). The differential diagnosis approach is widely accepted as reliable under Daubert in the medical context. See, e.g., In re Paoli, 35 F.3d at 758; Clausen v. M/V New Carissa, 339 F.3d 1049, 1058-59 (9th Cir. 2003); Zuchowicz v. United States, 140 F.3d 381, 387 (2d Cir. 1998). The Tenth Circuit—the only circuit to address the question—has held that the use of the differential diagnosis approach in accident investigation is permissible under Daubert. See Bitler v. A.O. Smith Corp., 400 F.3d 1227, 1236-38 (10th Cir. 2004). The Tenth Circuit stated that an expert employing the differential diagnosis approach must provide objective reasons for eliminating

⁸ In his deposition, Sommer described his approach as:

a method by which you go through all of the relevant documentation, you look at the wreckage components, you perform analyses of the different components, you explore the maintenance history, the service history . . . [E]ach individual investigation is tailored to the factual data and information that is available for that investigation.

(Doc. 109, Ex. 2, at 69). In other words, Sommer’s differential diagnosis approach involved working backwards to determine the cause of the crash, eliminating possible causes as improper until he identified the most likely cause of the crash. See Bitler v. A.O. Smith Corp., 400 F.3d 1227, 1237 (10th Cir. 2004). The Tenth Circuit has described this approach as “reasoning to the best inference.” Id.

alternative causes and must provide “some independent evidence that the cause identified is of the type that could have been the cause.” Id. at 1237 (citation omitted). The Tenth Circuit noted, however, that although an expert must demonstrate that other causes are improper, the expert does not need “to categorically exclude each and every possible alternative cause.” Id. at 1238 n.6 (citation omitted).

The court finds Bitler persuasive in light of the application of the facts of the instant case to the factors enunciated in In re Paoli. The methodology employed by Sommer is prescribed and used by the National Transportation Safety Board School of Accident Investigation, the ICAO Manual for Accident Investigation, and the Southern California Safety Institute School of Accident Investigation and is widely accepted in the field of accident investigation and reconstruction. (Doc 109, Ex. 1 ¶ 4; Doc. 109, Ex. 2, at 69). Manuals and publications provided Sommer with detailed guidance and standards for applying his methodology. (Doc. 109, Ex. 1 ¶ 4). Moreover, Sommer has immense expertise in accident investigation, investigating over three hundred fixed wing and rotocraft accidents and developing detailed textual and visual publications on accident investigation methodology. (Id. ¶¶ 3-4).

Sommer provided objective reasons for eliminating alternative causes of the accident and presented independent evidence to support his conclusion that “[t]he tube on the oil drain tank failed due to the overhung load and the engine vibration” thereby causing the oil to leak and the turbocharger to fail. (Doc. 109, Ex. 2, at 60-61). Sommer’s opinion that the flange of the oil drain tank sustained a fatigue

failure due to excessive vibration is supported by his examination of the flange which showed oil residue and smearing and polishing. (Doc. 109, Ex. 2, at 42-43, 50; Doc. 109, Ex. 4, at 8). Sommer noted that oil residue and smearing are consistent with continued contact of the mating surfaces following the initiation of the fracture and inconsistent with an overload fracture.⁹ (*Id.*) Similarly, Sommer's opinion that material overstress in the drain tank was caused by crankshaft torsional vibration was supported by, *inter alia*, his inspection and measurements of an exemplar aircraft and the wreckage of Mr. Pease's aircraft, his review of service reports involving similar engine failures in other TIO-540 engines and internal Lycoming reports and general engineering principles. (Doc. 109, Ex. 2, at 23-26, 35; Doc. 116, Ex. 11, at 9-10, 12).

Lycoming provides no legal or scientific support for the proposition that Sommer's failure to conduct *its* suggested testing of his opinions requires exclusion of Sommer's expert testimony. Courts often accept expert testimony in aircraft accident cases without requiring independent testing or peer review and publication.¹⁰ See, e.g., Lidle ex rel. Lidle v. Cirrus Design Corp., No. 08-CV-1253,

⁹ At his deposition, Sommer testified that a metallurgist informed him that at least "some of the smearing could have been due to torsional smear of the two surfaces together, which may have happened at impact." (Doc. 109, Ex. 2, at 122). This alternative theory impacts the weight, but not the admissibility of Sommer's testimony. A review of Sommer's deposition clearly indicates that he stands by his Rule 26 report.

¹⁰ The Third Circuit squarely addressed this question in the context of an expert applying the differential diagnosis approach in the medical context. See Heller v. Shaw Indus., Inc., 167 F.3d 146, 155 (3d Cir. 1999). The Heller court held

2010 WL 2674584, at *7 (S.D.N.Y. July 6, 2010); Stecyk v. Bell Helicopter Textron, Inc., No. 94-CV-1819, 1998 WL 599256, at *3-4 (E.D. Pa. Sept. 8, 1998). Sommer's opinions are based on valid reasoning and methodology regularly applied in the context of accident investigation and reconstruction, not his *ipse dixit*. The fact that Sommer could have bolstered his conclusions through scientific testing impacts the weight, but not the admissibility of his testimony. See Lidle ex rel. Lidle v. Cirrus Design Corp., 2010 WL 2674584, at *7 (citation omitted). Lycoming will have ample opportunity to challenge the validity of Sommer's conclusions through vigorous cross-examination. For these reasons, the court finds that Sommer is qualified as an expert, that he has "good grounds" for his opinions and that his testimony will be helpful to the finder of fact. Accordingly, Lycoming's motion to exclude Sommer's expert testimony is denied.

2. Mr. Douglas Herlihy¹¹

Lycoming seeks to prevent the admission of Herlihy's testimony on three grounds. First, Lycoming asserts that Herlihy lacks the technical or specialized knowledge to opine reliably on the issues of engine design, manufacture, certification, or federal standards of care. (Doc. 80, at 15-18). Second, Lycoming contends that Herlihy's opinions are unreliable because they are not the product of

that the proffer of independent, peer-reviewed studies in support of an expert's opinion is not the *sine qua non* of reliability. Id.

¹¹ The opinions Herlihy intends to offer at trial can be found on pages seven through nine of his deposition. (See Doc. 111, Ex. 2, at 7-9).

any objectively verifiable scientific method, and because Herlihy has ignored possible alternative causes of the crash. (Id. at 8-15). Finally, Lycoming argues that Herlihy's opinions will provide no assistance to the jury because: (1) he failed to engage in any scientific methodology and (2) his opinions are contradicted by the physical evidence and other witnesses. (Id. at 18-20).

a. Qualifications

Lycoming contends that Herlihy is not qualified to provide expert testimony on engine design, manufacture, certification, or on federal standards of care because he has never worked for the FAA, has no background, training, or experience in aircraft design, manufacturing, or certification, and lacks an engineering background. (Id. at 15-18). Lycoming notes that although a proposed expert may be qualified in one area, this does not *ipso facto* qualify the expert to testify in other related areas. See Surace v. Caterpillar, Inc., 111 F.3d 1039, 1056 (3d Cir. 1997). The court finds that Herlihy has unassailable qualifications and is more than qualified to testify on the issues of engine design, certification, manufacture, and federal standards of care.

Herlihy's qualifications are as follows. Herlihy is a graduate of the National Transportation Safety Board Accident Investigation Course, the FAA Aircraft Accident Investigation Course, and the Flight Safety Officer School of the University of Southern California. (Doc. 111, Ex. 1, at 2). Herlihy is an FAA certified single engine land and sea, instrument-rated pilot with more than 17,000 pilot-in-command flight hours and 45 years of experience. (Id.) He has worked as

the National Transportation Safety Board's ("NTSB") Operations Group Chairman, leading investigations of aviation accidents. (Id. at 1). Herlihy also has experience as an instructor in aircraft accident investigation at the University of Southern California Aviation Safety Program and an air safety consultant and forensic investigator in private practice. (Id.) Finally, Herlihy authored or co-authored sixteen NTSB safety recommendations later adopted by the members of the NTSB. (Id.)

As explained above, the Third Circuit has eschewed imposing "overly rigorous requirements of expertise and have been satisfied with more generalized qualifications." In re Paoli, 35 F.3d at 741. Herlihy's experiences as an accident investigator for the NTSB and in private practice provide him with the knowledge, skill, experience, and training to opine about engine design, certification, and manufacturing and federal standards of care. Herlihy has prepared hundreds of reports delineating the causes of aircraft failure, including crashes caused by defectively designed or manufactured engines.¹² (Doc. 110, at 9; Doc. 111, Ex. 2, at, 56; Doc. 161, at 2). A number of these investigations involved TIO-540 Lycoming

¹² Armed with the imprimatur of congressional authorization, NTSB investigators must endeavor to ascertain the cause and origin of aircraft accidents. See Folsom v. Kawasaki Motors Corp. U.S.A., 509 F. Supp. 2d 1364, 1372 n.7 (M.D. Ga. 2007) (citation omitted). The cause of the accident may include the design of the aircraft or the aircraft component part. (See Doc. 111, Ex. 2, at 56 ("[A]n NTSB investigator in charge[] is to take the data, the information from all sources, and render a cause. It involves operational issues, as well as maintenance, mechanical, [and] design functions.")).

engines. (Doc. 111, Ex. 2, at 23, 26; Doc. 161, at 2). Furthermore, Herlihy is familiar with FAA certification and regulatory requirements through his experiences as the Operation Group Chairman for the NTSB, as a forensic investigator in private practice, and as a licensed pilot. That Herlihy is not a licensed engineer may provide fodder for cross-examination at trial, but this fact certainly does not disqualify him as an expert, particularly in light of his years of experience as an accident investigator, pilot, and graduate level instructor. The court finds that Herlihy is qualified to provide expert testimony on engine design, manufacture, certification and federal standards of care.

b. Reliability

The purpose of Daubert's gatekeeping requirement is to ensure an expert “employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” Kumho Tire Co., 526 U.S. at 152. In the instant case, Herlihy testified that he employed the same methodology used by NTSB investigators to investigate plane crashes. (Doc. 111, Ex. 2, 53-55). He described his approach as “eclectic” involving aggregation of all available information from all available sources to arrive at an objective, scientific explanation for the crash.¹³ (Id.) Herlihy explained that he begins with the assumption that anything could have caused the crash, and then gradually rules out potential causal factors. (Id. at 71-72). Lycoming contends that Herlihy did not

¹³ Although Herlihy uses different terminology, his approach is substantially similar to Sommer’s differential diagnosis approach.

follow this methodology. (Doc. 80, at 7). Specifically, Lycoming argues that: (1) Herlihy's opinion on the cause of the crash is based solely on his *ipse dixit*; (2) Herlihy's opinions are untested; and (3) Herlihy failed to consider alternative causes. (Doc. 80, at 8-15).

A court "must examine the expert's conclusions to determine whether they could reliably follow from the facts known to the expert and the methodology used." Heller v. Shaw Indus., Inc., 167 F.3d 146, 153 (3d Cir. 1999). An expert must provide an "objective anchor for his conclusions" beyond mere training and experience. Booth v. Black & Decker, Inc., 166 F. Supp. 2d 215, 218-22 (E.D. Pa. 2001) (excluding expert testimony when the expert did not offer any source for his conclusion beyond his personal experience); see also Oddi v. Ford Motor Co., 234 F.3d 136, 155-59 (3d Cir. 2000) (excluding expert testimony when the expert "used little, if any, methodology beyond his own intuition," no standards controlled his analysis, and the gatekeeper could not "assess the relationship of [the expert's] method to other methods known to be reliable and the non-judicial uses to which it has been put").

At his deposition, Herlihy opined that the fracture and oil loss were the result of weld failure which developed over an undetermined period of time. (Doc. 111, Ex. 2, at 8-9, 160). Herlihy concluded that the weld failure evidenced excessive vibration because the turbocharger drain tube cracked and the flange "exhibited clear characteristics of fatigue [failure]." (*Id.*) Herlihy based this conclusion on personal examination of the wreckage and components of the wreckage, analysis of electronic microscopic pictures, and a review of relevant documents, depositions,

and hundreds of accident reports.¹⁴ (*Id.* at 59). Although Herlihy partly relied on his extensive experience as an accident investigator, Herlihy also provided objective anchors to support his conclusion regarding the cause of the accident. In particular, Herlihy noted that he detected burnishing on the flange and cooked oil on the outside of the flange and the bottom of the turbocharger. (Doc. 111, Ex. 2, at 162-63; Doc. 161, at 7-8, 12). Herlihy explained that this evidence clearly demonstrates weld failure because “one cannot get oil onto the outside of that flange unless you put oil onto it while it’s hot. In a brand-new piece that is an exemplar piece that has never been hot, there will be no oil cooked on the outside of it.” (Doc. 111, Ex. 2, at 163-64; see also Doc. 161, at 7-8, 12). Thus, Herlihy provides the court with sufficient information beyond his *ipse dixit* to understand and to assess the reliability of his methodology.

In addition, the record clearly demonstrates that Herlihy considered alternative causes. Herlihy testified in detail about causes he considered but ultimately determined were not responsible for the crash. (*Id.* at 71-72 (noting that he considered weather, fire, and airframe failure as possible causes of the crash)). Contrary to Lycoming’s assertion, Herlihy ruled out pilot error as the cause of the crash. (*Id.* at 9, 70-71). Thus, Herlihy reasonably employed his standard investigative methodology in this case, a methodology well-accepted in the field of aircraft accident investigation.

¹⁴ Document 161 contains a full list of the materials considered by Herlihy in forming his opinions.

Finally, the absence of testing does not warrant exclusion of Herlihy's expert testimony. See supra Section III.A.1.b. Herlihy employed the same level of intellectual rigor that characterizes the investigations of plane crashes by the NTSB and private investigators. Kumho Tire Co., 526 U.S. at 152. Herlihy carefully ruled out possible alternative causes and supported his final conclusions with objective evidence, tapping into his experience of investigating hundreds of plane crashes. This satisfies the reliability requirement of Rule 702 and Daubert. See In re TMI Litig., 193 F.3d at 665 (“[T]he standard for determining reliability is not that high” (citation and quotations omitted)).

c. Fit

Rule 702 requires that proffered expert testimony “assist the trier of fact to understand the evidence or to determine a fact in issue.” FED. R. EVID. 702. The court must consider whether proffered expert testimony is “sufficiently tied to the facts of the case that it will aid the jury in resolving a factual dispute.” United States v. Downing, 753 F.2d 1224, 1242 (3d Cir. 1985). Lycoming contends that Herlihy's testimony will not assist the jury and is irrelevant. It argues that Herlihy did not engage “in any scientific process, research or testing” and that his opinion—that vibration caused a fatigue fracture—is contradicted by other expert testimony and evidence. (Doc. 80, at 19).

The standard for admissibility under Rule 702 is “lower than the merits standard of correctness.” In re Paoli, 35 F.3d at 744. As explained above, Herlihy appropriately employed proven methodology used by aviation accident

investigators and provided objective concrete bases for his conclusions. Herlihy's conclusion that the crash was caused by a fatigue fracture at the weld of the flange directly relates to the ultimate fact at issue in this case, i.e. why Mr. Pease's plane crashed on June 5, 2005. Lycoming will have ample opportunity to demonstrate the purported shortcomings of Herlihy's testimony through "[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof." Daubert, 509 U.S. at 596 (citation omitted). For these reasons, the court finds that the Peases have met their burden of demonstrating that Herlihy is qualified as an expert, that he has "good grounds" for his opinions and that his testimony will be helpful to the finder of fact. Accordingly, Lycoming's motion to exclude Herlihy's expert testimony is denied.

B. Motion for Summary Judgment on Federal Preemption Grounds

Lycoming contends that the Federal Aviation Act of 1958 (the "Aviation Act") preempts state standards of care regarding aviation safety and that the issuance of Type Certificate E14EA proves as a matter of law it complied with all applicable FAA regulations. (See Doc. 64). The Peases counter that the Aviation Act does not preempt state standards of care regarding aviation safety and that, even if state standards of care are preempted by federal law, the issuance of Type Certificate E14E4 does not foreclose them from proving Lycoming violated applicable FAA regulations. (See Doc. 91).

1. Preemption of State Standards of Care

Lycoming asserts that federal law governs the standards of care applicable to aircraft and aircraft component part manufacturers and that these federal standards preempt any state law standards of care. (Doc. 64, at 5-12). Congress enacted the Federal Aviation Act of 1958 (the “Aviation Act”), codified at 49 U.S.C. §§ 40101 *et seq.*, to create “a uniform and exclusive system of federal regulation.” City of Burbank v. Lockheed Air Terminal, Inc., 411 U.S. 624, 639 (1973). The legislative history of the Aviation Act demonstrates that Congress intended to entrust the federal government with sole responsibility for regulating the aviation industry. See Abdullah v. American Airlines, Inc., 181 F.3d 363, 368-69 (3d Cir. 1999) (citing S. REP. NO. 1811, 85th Cong., 2d Sess. 5 (1958); H.R. REP. NO. 2360, *reprinted in* 1958 U.S.C.C.A.N. 3741, 3741). The Aviation Act requires the Administrator of the FAA to “promote safe flight of civil aircraft in air commerce by prescribing minimum standards required in the interest of safety for appliances and for the design, material, construction, quality of work, and performance of aircraft, aircraft engines, and propellers.” 49 U.S.C. § 44701(a)(1).

The Third Circuit specifically addressed whether the Aviation Act preempts state standards of care in Abdullah. 181 F.3d at 366-75. The Third Circuit held “that federal law establishes the applicable standards of care in the field of air safety, generally, thus preempting the entire field from state and territorial regulation.” Id. at 367. In other words, federal regulations establish the safety

standards in the field of aviation safety and these standards may not be supplemented or varied by the states. Id. at 365.

The Peases assert that Abdullah only applies to operational commercial aviation cases and is not applicable to the entire field of aviation safety and therefore their state law claims are not precluded. (Doc. 91, at 4). This argument has already been rejected by other district courts in this circuit. See Sikkelee v. Precision Airmotive Corp., 731 F. Supp. 2d 429, 432-40 (M.D. Pa. 2010); Landis v. U.S. Airways, Inc., Civ. A. No. 07-1216, 2008 WL 728369, at *2, 4 (W.D. Pa. Mar. 18, 2008); Duvall v. Avco Corp., Civ. A. No. 05-1786, 2006 WL 1410794, at *2-3 (M.D. Pa. May 19, 2006). The Abdullah decision contains no language restricting its application to operational commercial aviation. See 181 F.3d at 366-75; see also Duvall, 2006 WL 1410794, at *2. In fact, the Abdullah decision explicitly rejected the notion that federal regulations preempt only discrete aspects of state air safety standards. 181 F.3d at 365 (“[C]ontrary to courts that have found that federal law does not preempt state and territorial air safety standards, or that federal law only preempts discrete aspects thereof, we find implied federal preemption of *the entire field* of aviation safety.” (emphasis added)). Any objective interpretation of the phrase, “the entire field of aviation safety” encompasses the design and manufacture of airplanes and airplane component parts. Moreover, the Abdullah court explicitly rejected the decisions of other circuits which held that state standards of care related to aviation safety are not preempted by the Aviation Act in products liability cases. Id. at 372-74 (rejecting the preemption analyses of

Cleveland v. Piper Aircraft Corp., 985 F.2d 1438 (10th Cir. 1993) and Public Health Trust v. Lake Aircraft, Inc., 992 F.2d 291 (11th Cir. 1993)).

The Third Circuit recently revisited the Abdullah decision in Elassaad v. Independence Air, Inc., 613 F.3d 119 (3d Cir. 2010). The Elassaad decision slightly narrowed, but did not overturn Abdullah, holding that the field preempted by the Aviation Act “was [] limited to in-air safety” and did not encompass “supervision of the disembarkation process.”¹⁵ Id. at 127. Importantly, Elassaad highlighted regulations detailing certification and airworthiness requirements for aircraft parts as examples of regulations relating to flight. Id. at 128. The instant case directly implicates “in-air safety” because it involves a plane crash.¹⁶ (Doc. 68 ¶ 1; Doc. 117 ¶ 1).

¹⁵ The Elassaad court noted that the area of disembarkment “is neither specifically regulated by federal law nor clearly governed by a general federal standard of care.” Id. at 131. In sharp contrast, the FAA has promulgated numerous, detailed regulations governing the design and manufacture of aircraft engines. See generally 14 C.F.R. § 33.

¹⁶ The Third Circuit in Elassaad did not limit the term “in-air safety” to regulations imposed during the actual flight of an aircraft. Id. at 128-29 (describing regulations prescribing pilot qualifications). The Elassaad court emphasized that the Aviation Act “directs the FAA to issue regulations in keeping with two safety-related goals: the reduction or elimination [of] the possibility or recurrence of accidents in air transportation, and the promotion of safe flight of civil aircraft, such as by *prescribing standards for the construction and maintenance of aircraft . . .*” Id. at 128 (quoting § 44701(c) (brackets and quotations omitted; emphases added)). Quite obviously, the proper design and manufacture of airplanes and airplane component parts falls within the ambit of “construction and maintenance of aircraft,” and are essential to ensuring “in-air safety” and the promotion of safe flight of civil aircraft. See infra Section IV.

The Peases request that the court reconsider the application of Abdullah in light of two recent Supreme Court decisions: Wyeth v. Levine, 555 U.S. 555, 129 S. Ct. 1187 (2009) and Williamson v. Mazda Motor of America, Inc., --- U.S. ---, 131 S. Ct. 1131 (2011). (Doc. 91, at 4; Doc. 124, at 1-5). In Wyeth, the Supreme Court stated that “two cornerstones of preemption jurisprudence” must guide a court in preemption analysis: (1) Congressional purpose and (2) the assumption that state law is “not to be superseded by the Federal Act unless that was the clear and manifest purpose of Congress.” Wyeth, 555 U.S. at ---, 129 S. Ct. at 1194-95 (citations and quotations omitted). Applying this framework, the Supreme Court held that the Food and Drug Administration’s drug labeling judgments did not preempt the plaintiff’s state law failure to warn claim. Id. at 1204. Similarly, the issue in Williamson was whether the 1989 version of Federal Motor Vehicle Safety Standard 208 (FMVSS 208)—allowing auto manufacturers to install either lap-and-shoulder belts or lap belts in middle car seats—preempted a state tort suit that would impose liability on a manufacturer who chose to install a lap belt. --- U.S. ---, 131 S. Ct. at 1134. The Supreme Court held that the state tort suit was not preempted even though it may restrict the manufacturer’s choice because the *state law claim* did not “stand as an obstacle to the accomplishment [] of the full purposes and objectives of federal law.”¹⁷ Id. at 1140 (citation, quotations, and brackets omitted).

¹⁷ Williamson is inapposite when *state law* is preempted by federal law.

The court finds that Wyeth and Williamson do not affect the continued validity of Abdullah. The Abdullah court recognized the two cornerstones of preemption jurisprudence in its preemption analysis. 181 F. 3d at 366 (noting that the “purpose of Congress is the ultimate touchstone of pre-emption analysis” and that there is a presumption that the historic police powers of the States are not preempted by federal law unless it is the “clear and manifest purpose of Congress.” Id. at 367 (citations, quotations, and brackets omitted)). Moreover, the Abdullah court thoroughly examined the legislative history of the Aviation Act, and held that any independent state regulation would undermine Congressional intent to create a “single, uniform system of regulation.” Id. at 368-72. Thus, Abdullah remains good law after Wyeth and Williamson.¹⁸ See Sikkelee, 731 F. Supp. 2d at 438-39. Federal standards of care apply to the Peases’ state law claims.

¹⁸ Deference to the overarching concern of improving aviation safety would seem to favor a restrictive interpretation of Abdullah. The court also recognizes that Abdullah’s field preemption analysis has been criticized by other courts and scholars. See, e.g., Sheesley v. The Cessna Aircraft Co., 2006 WL 1084103, at *22 (D.S.D. Apr. 20, 2006); Monroe v. Cessna Aircraft Co., 417 F. Supp. 2d 824 (E.D. Tex. 2006); John D. McClune, *There is No Complete, Implied, or Field Federal Preemption of State Law Personal Injury/Wrongful Death Negligence or Product Liability Claims in General Aviation Cases*, 71 J. AIR L. & COM. 717 (Fall 2006). The court is constrained, however, to faithfully interpret and apply the binding precedent of the Third Circuit. The sweeping language of Abdullah simply does not permit a restrictive interpretation limiting the decision’s application to operational aviation cases. See *infra* Section IV: Epilogue: Abdullah Redux (discussing the implications of Abdullah’s *ratio decidendi* as applied to aviation products liability cases).

2. Issuance of Type Certificate E14EA

The FAA issues type certificates for aircraft, aircraft engines, propellers, and appliances to ensure that aircrafts and their parts are safe.¹⁹ 49 U.S.C. § 44704. To receive a type certificate, a manufacturer must demonstrate to the Administrator of the FAA that the product's design, specifications, and manufacturing process meet all applicable FAA regulations. Id. Prior to issuance of a type certificate, the Administrator investigates the manufacturer's application and orders any tests he or she deems "necessary in the interest of safety." Id. On June 25, 1997, the FAA added the Lycoming TIO-540-AH1A engine to FAA Type Certificate E14EA. (Doc. 54, Ex. 1). Type Certificate E14EA states:

the type design for the following product with the operating conditions therefore as specified in the Federal Aviation Regulations and the Type Certificate Data Sheet, meets the airworthiness requirements of Part 13/33 of the Federal Aviation Regulations.

(Id. at 1). On July 9, 1997, the FAA issued Type Certificate A3SO for the Piper PA-32R-301T model aircraft equipped with the Lycoming TIO-540-AH1A engine. (Doc. 105, Ex. 4). Lycoming contends that the issuance of the type certificate for the AH1A engine proves as a matter of law that it complied with all applicable FAA testing and airworthiness regulations. (Doc. 106, at 9-15).

¹⁹ See Robert F. Hedrick, *A Close and Critical Analysis of the New General Aviation Revitalization Act*, 62 J. AIR. L. & COM. 385, 390 (1996) for an in-depth discussion on type certificates.

a. **FAA Airworthiness Regulations**

As a threshold matter, the court notes that Lycoming has not provided, nor has the court located, a single case holding that issuance of a type certificate is an absolute defense in product liability aviation accident cases. Indeed, several cases have specifically held that FAA certification does not foreclose design defect claims. See, e.g., Monroe v. Cessna Aircraft Co., 417 F. Supp. 2d 824, 836 (E.D. Tex. 2006); Dudley v. Business Exp., Inc., 882 F. Supp. 199, 207 (D.N.H. 1994) (concluding that the goal of protecting individuals who choose to fly in planes “would be enhanced rather than defeated by allowing a jury to consider whether the design of an aircraft is defective, despite the fact that the FAA has already issued a type certificate for the aircraft” (citations and quotations omitted)); Wilson v. Piper Aircraft Corp., 577 P.2d 1322, 1325 (Or. 1978); 8A AM. JUR. 2D *Aviation* § 180. Nonetheless, the court is cognizant of its *stare decisis* obligations to follow the law as articulated in Abdullah and fully recognizes that it cannot conjure up a state standard of care to supplement federal regulations.

Closer examination of Abdullah is critical to the court’s analysis. Abdullah stands only for the proposition that the FAA has sole authority to promulgate regulations relating to the field of in-air safety. Abdullah, 181 F.3d at 367. The Abdullah court explicitly held that “[f]ederal preemption of standards of care can coexist with state and territorial tort remedies.” Id. at 375; see also 49 U.S.C. § 40120(c) (“A remedy under this part is in addition to any other remedies provided by law.”). Lycoming asserts that Abdullah preempts state of standards of care and

that federal standards of care are satisfied by the issuance of a type certificate by the FAA. (See Docs. 64, 106). Extending Lycoming’s reasoning to its logical conclusion, receipt of an FAA type certificate would, effectively, preempt all state and territorial remedies and immunize airplane and airplane component part manufacturers from aviation product liability suits in the Third Circuit. There is simply no textual support in either the Abdullah decision or the Aviation Act that Congress intended the FAA to act as the sole arbiter of whether manufacturers have complied with its own regulations.

The California Supreme Court addressed this issue in a similar context in Elsworth v. Beech Aircraft Corp., 691 P.2d 630 (Cal. 1984). In Elsworth, the defendant, Beech Aircraft Corporation (“Beech”), contended that the trial court erred when it provided a negligence per se instruction, essentially stating “that Beech was guilty of negligence if [the plane] did not meet the [FAA] regulations.” Id. at 634. Beech argued that this instruction improperly allowed the jury to “second-guess the FAA decision that the [aircraft] complied with the regulations, thereby intruding into a field preempted by federal law.” Id. The California Supreme Court disagreed, holding that FAA certification did not prevent the jury from finding that Beech violated FAA regulations. Id. at 637. The court noted that there was no “irreconcilable conflict” between the imposition of state law tort actions for violations of FAA regulations and the Aviation Act’s preemption of the field of aircraft safety. Id. at 635. The Elsworth court emphasized that a jury determination that an aircraft violated FAA regulations would not impact the

validity of FAA certification decisions. Id. According to the Elsworth court, state law tort actions posed no “obstacle to the federal regulatory scheme.” Id. at 636. The California Supreme Court reasoned that tort suits promoted the underlying purpose of FAA regulations by “revealing violations or defects which may not have come to the attention of the FAA at the time it issued the certificate.” Id.

The court is persuaded by the *ratio decidendi* of Elsworth. Like the heirs of the Elsworths, the Peases are not challenging the ability of the FAA to adopt safety regulations or to certify aircraft and aircraft component parts under those regulations. Id. at 635. Admittedly, the court’s holding permits the jury to disagree with FAA’s determination that the AH1A engine complied with applicable FAA regulations as reflected by FAA’s issuance of Type Certificate E14EA. This ostensible conflict is perfectly consonant with tort jurisprudence and pragmatically recognizes the limitations of FAA certification. In United States v. S. A. Empresa De Viacao Aerea Rio Grandense (Varig Airlines), 467 U.S. 797 (1984), the Supreme Court expressly recognized the limited human and financial resources of the FAA, candidly observing that the FAA merely “spot checks” to ensure regulatory compliance. Id. at 816-18. Moreover, as the Elsworth court aptly noted, there is a salutary effect of opening the courthouse door: “An inquiry . . . into whether the manufacturer in fact complied with the regulations . . . would assist the FAA in policing a manufacturer’s compliance rather than hampering the agency in this regard.” Id. at 636. In the case *sub judice*, the Peases products liability claims regarding the airworthiness of the AH1A engine serve the public interest of

ensuring that Lycoming complied with all applicable FAA regulations. The Peases claims will not disrupt the “uniform system of regulation” desired by Congress because the FAA still has *sole* authority to promulgate regulations. See Abdullah, 181 F.3d at 368. Thus, the court holds that the Peases are not foreclosed from litigating claims relating to the airworthiness of the AH1A engine.

b. FAA Testing Regulations

Whether the issuance of Type Certificate E14EA forecloses the Peases from litigating alleged violations of FAA testing regulations is a more difficult question. Sommer, the Peases’ expert, concedes that manufacturers may certify a new product under a pre-existing type certificate without additional testing when the product is substantially similar to a previously certified product. (Doc. 109, Ex. 2, at 73-74). In addition, it is undisputed that the FAA found the AH1A engine to be “substantially similar” to a prior TIO-540 engine, the TIO-540-S1AD engine; thus, the AH1A engine was eligible for certification under a pre-existing type certificate without additional vibration testing. (Doc. 54, Ex. 1; Doc. 105, Ex. 5, 149-53). Nevertheless, for the very reasons the court will permit a jury to make an independent determination of the AH1A engine’s compliance with FAA regulations, the jury must also make an independent determination of the AH1A engine’s “substantial similarity” to the TIO-540-S1AD engine. As previously noted, the possibility of an error on the part of the FAA during the certification process is not an “abstruse theory.” Elsworth, 691 P.2d at 633. Neither Abdullah nor the statutory language of the Aviation Act suggest legislative intent to empower the

FAA as sole arbiter of compliance with FAA testing regulations. This court's holding does not disturb the FAA's compliance determination for certification purposes. A contrary holding would effectively preempt state law remedies in contravention of the Aviation's Act savings clause. Thus, the FAA's issuance of a type certificate does not foreclose the Peases from litigating alleged violations of FAA testing regulations. See U.S.C. § 40120(c).

3. **Summary Judgment under Federal Standards of Care**

In Counts I, II, and III of their amended complaint, the Peases specifically allege four violations of the Civil Air Regulations ("CARs")—13.200, 13.201, 13.103, and 13.151— and nine violations of the Federal Air Regulations ("FARs")—21.3, 33.19, 33.33, 33.35,²⁰ 33.4, 33.43, 33.49, 33.83, 145.221—as proximate cause of the

²⁰ The Peases incorrectly cite FAR Part 33.35 as relating to "Accessory Attachments - required to be safe as fully loaded." (Doc. 46). FAR Part 33.25 is the regulation that address accessory attachments. 14 C.F.R. § 33.25. The court construes the complaint as referring to FAR Part § 33.25.

plane crash and the injuries suffered by Mr. Pease on June 5, 2005.²¹ (See Doc. 46, at 5-15). Count IV of the amended complaint generally alleges that Lycoming breached a “federally recognized standard of care in the aviation industry.” (Doc. 46 ¶ 50). Lycoming asserts that the Peases have not presented sufficient evidence to prove it violated any applicable FAA regulation.

a. FAA Airworthiness Regulations

The Peases contend that Lycoming violated CARs part 13.103 and 13.200(a) and FARs part 33.19, 33.25 33.33, and 33.4 relating to engine design and airworthiness. Lycoming argues that the only “opinions” the Peases proffer to prove a breach of FAA regulations are the impermissible legal conclusions of experts Sommer and Herlihy. (See Doc. 64, at 12). This argument is unavailing. The experts have not improperly stated their principal opinions as legal standards or “legal conclusions drawn by applying the law to the facts.” VIM, Inc. v. Somerset Hotel Ass'n, 19 F. Supp. 2d 422, 427 n.4 (W.D. Pa. 1998) (citations omitted). A review

²¹ Both the Peases and Lycoming argue at length about the applicability of FAR Part 23.1013 in their briefs. (See Doc. 64, at 13; Doc. 91, at 5-6). The amended complaint, however, does not allege a violation of FAR Part 23.1013. (See Doc. 46). Assuming *arguendo* that the Peases’ allegations were construed to include claims alleging the violation of FAR Part 23.1013, the regulation is inapplicable to the instant case. FAR Part 23 “prescribes airworthiness standards for the issue of type certificates, and changes to those certificates, for *airplanes* in the normal, utility, acrobatic, and commuter categories.” 14 C.F.R. § 23.1(a) (emphasis added). The plain language of FAR Part 23 clearly pertains to aircraft manufacturers, not aircraft component parts manufacturers. *Part 33* prescribes the airworthiness standards for engine manufacturers. See 14 C.F.R. § 33.1(a) (“This part prescribes airworthiness standards for the issue of type certificates and changes to those certificates, for aircraft engines.”). Thus, Lycoming is required to comply with the airworthiness standards of FAR Part 33, not FAR Part 23.

of the deposition testimony reflects that *defense counsel* questioned Sommer and Herlihy on whether specific FAA regulations were violated. (See, e.g., Doc. 111, Ex. 2, at 194 (“For [the Peases] to get to a jury, you need to tell me a violation of the Federal Aviation Regulation[s].”)). The sum of Sommer’s testimony and Herlihy’s testimony regarding the cause of Mr. Pease’s accident and the defective design of the AH1A engine is sufficient to allow a reasonable jury to find that Lycoming violated these FAA airworthiness regulations, with the exception of 33.4.²² (See, e.g., Doc. 109, Ex. 2, at 29-31, 60-64; Doc. 111, Ex. 2, at 160-68); see *infra* Section III.C.2 (discussing Sommer’s and Herlihy’s testimony on the alleged defect in the AH1A engine). FAR Part 33.4 requires type certificate applicants to prepare instructions for continued airworthiness that are acceptable to the Administrator. The Peases have presented no evidence that Lycoming breached this regulation. Accordingly, the Peases’ claim that Lycoming violated FAR Part 33.4 fails as a matter of law.

b. FAA Testing Regulations

The Peases allege violations of CARs 13.201 and 13.151 and FARs Part 33.43, 33.49 and 33.83 relating to the testing conducted on the AH1A engine. As explained

²² Although rather obscurely phrased, the court construes the amended complaint as alleging that the AH1A engine violates FAA airworthiness regulations because of the defective design of the engine. The Peases cannot show a violation of the referenced FAA airworthiness regulations by proving that Lycoming did not conduct vibration testing on the AH1A engine.

above, the Peases may proceed on these claims only upon a showing that the AH1A engine is not substantially similar to the TIO-540-S1AD engine previously certified on Type Certificate E14E4. It is undisputed that additional testing was not required under FAA regulations if the AH1A engine was properly certified under the pre-existing type certificate. (Doc. 54, Ex. 1; Doc. 105, Ex. 5, 73-74, 149-53). If the jury concludes that the AH1A engine is substantially similar TIO-540-S1AD engine certified on Type Certificate E14EA, Lycoming cannot be held liable for violations of CARs 13.201 and 13.151 and FARs Part 33.43, 33.49, and 33.83.

The court finds that the Peases have presented sufficient evidence to demonstrate a factual dispute on issue of the AH1A's engine substantial similarity to the S1AD engine. Lycoming's former Vice President of Engineering, Richard Moffett, testified that each TIO-540 engine is distinct. Specifically, Moffett acknowledged that the mounting and location of the turbocharger on the AH1A engine are different from other models. (See Doc. 91, Ex. 8, at 38-39, 72-73).

In addition, the court finds that the Peases can establish a breach of each of the referenced testing regulations, with the exception of FAR Part 33.49, because it is undisputed that Lycoming did not conduct additional vibration testing on the

AH1A engine.²³ (Doc. 90 ¶ 18; 104 ¶ 18). FAR Part 33.49 requires engine manufacturers to perform a 150 hour endurance test on their engines. 14 C.F.R. § 33.49. The Peases concede that Lycoming performed the test, but allege that it misrepresented the results as successful to the FAA. (Doc. 91, at 12; Doc. 54, Ex. 3, at 74). Other FAA regulations, not FAR Part 33.49, cover proper reporting of test results to the FAA. (See, e.g., 14 C.F.R. § 21.2). Hence, the Peases cannot establish a breach of FAR Part 33.49 by demonstrating that Lycoming improperly reported test results to the FAA, and the court will grant Lycoming summary judgment on this claim.

c. Post-Certification Regulations

The Peases allege in Count II of their amended complaint that Lycoming violated 14 C.F.R. §§ 21.3²⁴ and 14 C.F.R. 145.221²⁵ because Lycoming failed to report known malfunctions or defects occurring in TIO-540 model series engines. The record is devoid of evidence of a breach of FAR Part 21.3. The Peases point to

²³ The court will not allow the Peases to present inconsistent arguments on the “substantial similarity” issue to the jury. On one hand, the Peases contend that evidence of past accidents of TIO-540 model engines is relevant to proving a design defect in the AH1A engine because all of the TIO-540 engines are similar. On the other hand, the Peases assert that the AH1A engine is unique and that Lycoming violated FAA testing regulations by certifying under a pre-existing type certificate because of the unique characteristics of the AH1A engine. Before trial, the court will require the Peases choose one of these mutually exclusive theories.

²⁴ 14 C.F.R. § 21.3 requires the holder of a type certificate to report, *inter alia*, an engine malfunction, failure, or defect.

²⁵ 14 C.F.R. § 145.221 states that “[a] certificated repair station must report to the FAA within 96 hours after it discovers any serious failure, malfunction, or defect of an article.”

the expert testimony of Sommer who testified that he searched the FAA's service database and could not locate any reports mandated by FAR Part 21.3. (See Doc. 91, Ex. 3; Doc. 109, Ex. 2, at 85-94). In response, Lycoming correctly observes that FAR Part 21.3 reports "[m]ust be made to the *Aircraft Certification Office* in the region in which the person required to make the report is located," not to the main office of the FAA. 14 C.F.R. § 21.3(e) (emphasis added). Contrary to the Peases' assertion, the homepage of the FAA's service website does not provide access to FAR Part 21.3 reports.²⁶ See <http://av-info.faa.gov/sdrx/Default.aspx> (last visited Dec. 7, 2011). Thus, the absence of reports by Lycoming in the FAA service database is not affirmative evidence that Lycoming breached its obligations under FAR Part 21.3.

Lycoming's summary judgment briefs do not address the Peases' allegations that it violated FAR Part 145.221. As the moving party, Lycoming must establish that there is no genuine issues of material fact and that it is entitled to judgment as a matter of law. Watson v. Eastman Kodak Co., 235 F.3d 851, 854 (3d Cir. 2000). Therefore, the court will grant Lycoming summary judgment only on its alleged violation of FAR Part 21.3.

d. Reckless and Careless Conduct

Lycoming's summary judgment briefs do not address the Peases' claim that it breached a "federally recognized standard of care in the aviation industry." (Doc.

²⁶ Under the heading "Registered User Functions" the website lists "For FAR 121, 125, 129, 135, and 145 ONLY!"

46 ¶ 50). Accordingly, the court will deny Lycoming summary judgment on this claim.²⁷

C. Motion for Summary Judgment Pursuant to the Tennessee Products Liability Act of 1978

Lycoming also moves for summary judgment (Doc. 67) pursuant to the Tennessee Products Liability Act of 1978. Lycoming contends that: (1) it is entitled to a rebuttable presumption that the AH1A engine was not unreasonably dangerous when it left its control and the Peases have not put forth evidence to rebut the presumption; (2) the AH1A engine was not in a defective condition or unreasonably dangerous when it left its control; and (3) the Peases cannot prove proximate causation. (Doc. 79, at 1-2). For reasons stated below, the court will deny Lycoming's motion for summary judgment under the TPLA.

1. Application of TPLA's Rebuttable Presumption

On March 11, 2011, the court held that Tennessee law applies to the Peases' state law claims. (Doc. 107, at 6). The TPLA applies to product liability actions defined as "all actions brought for or on account of personal injury, death or property damage caused by or resulting from the manufacture, construction, design, formula, preparation, assembly, testing, service, warning, instruction,

²⁷ The court would be remiss, however, if it did not remark that this claim is unlikely to withstand a Rule 50 motion. The court construes Count IV as alleging a violation of 14 C.F.R. § 91.13 which states "[n]o person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another." 14 C.F.R. § 91.13. This regulation relates solely to the operation of an aircraft and therefore is inapplicable to Lycoming, an engine manufacturer.

marketing, packaging or labeling of any product” regardless of the theory of liability. TENN. CODE ANN. § 29-28-102(6). Under the TPLA, the Peases must demonstrate that the AH1A engine was “in a defective condition or unreasonably dangerous at the time it left the control” of Lycoming. Id. § 29-28-105.

Lycoming contends that it is entitled to a rebuttable presumption under TPLA § 29-28-104 which states:

Compliance by a manufacturer or seller with any federal or state statute or administrative regulation existing at the time a product was manufactured and prescribing standards for design, inspection, testing, manufacture, labeling, warning or instructions for use of a product, shall raise a rebuttable presumption that the product is not in an unreasonably dangerous condition in regard to matters covered by these standards.

Id. § 29-28-104. As previously stated, the court will allow the jury to make an independent determination of whether the AH1A engine actually complied with the FAA regulations. Notwithstanding this result, the court concludes that issuance of Type Certificate E14EA for the AH1A engine entitles Lycoming to TPLA’s rebuttable presumption. The court’s decision endeavors to balance Abdullah’s mandate that “[f]ederal preemption of standards of care can coexist with state and territorial tort remedies” with the purpose undergirding § 29-28-104, to wit: to give refuge to manufacturers and sellers who are operating “in good faith and in compliance with what law requires it to do.” Abdullah, 181 F.3d at 375; Tuggle v. Raymond Corp., 868 S.W.2d 621, 625 (Tenn. Ct. App. 1992). In the instant case, Lycoming acted in good-faith by relying on FAA’s determination that the AH1A engine could be certified under a pre-existing type certificate and satisfied

applicable FAA regulations. Therefore, Lycoming is entitled to a presumption that the AH1A engine was not unreasonably dangerous when it left Lycoming's control.²⁸ (Doc. 54, Ex. 1). The court cautions, however, that the presumption is inapplicable to the Peases' contention that the AH1A engine was defectively designed when it left Lycoming's control. TENN. CODE ANN § 29-28-104 (stating that conformance to regulations raises "a rebuttable presumption that the product is not in an *unreasonably dangerous condition*" (emphasis added)); see also Cruze v. Ford Motor Co., No. 03A01-9907-CV-00245, 1999 WL 1206798, at *10 (Tenn. Ct. App. Dec. 16, 1999) (citing Ray by Holman v. Bic Corp., 925 S.W.2d 527, 529 (Tenn. 1996)) (noting that the trial court properly refused to instruct the jury on § 29-28-104 when the plaintiff contended only that the product was defective and withdrew her claim that the product was unreasonably dangerous).

2. Defective Design or Unreasonably Dangerous

Under the TPLA, the Peases must prove that the AH1A engine was either defective or unreasonably dangerous at the time it left Lycoming's control. TENN. CODE ANN. § 29-28-105(a). Under Tennessee law the determination of whether a product is defective or unreasonably dangerous rests with the jury. Sigler v.

²⁸ The Peases suggest that Lycoming improperly sought to avoid more stringent FAA regulations by certifying under a pre-existing type certificate, but the court has found no record evidence of bad-faith on the part of Lycoming in its certification efforts. To be pellucidly clear, the court finds that it is not "bad-faith" to pursue certification in a manner allowed by the FAA.

American Honda Motor Co., 532 F.3d 469, 484 (6th Cir. 2008) (citing Jackson v. General Motors Corp., 60 S.W.3d 800, 805 (Tenn. 2001)).

a. Defective Design

The TPLA defines a defective condition as “a condition of a product that renders it unsafe for normal or anticipatable handling and consumption.” TENN. CODE ANN. § 29-28-102(2). Injury alone is not proof of defect. See King v. Danek Med., Inc., 37 S.W.3d 429, 435 (Tenn. Ct. App. 2000). To establish a defect, plaintiff must trace his or her injury “to some [s]pecific error in construction or design of the [product]” through either “direct or circumstantial evidence or a combination” of the two. Browder v. Pettigrew, 541 S.W.2d 402, 404-05 (Tenn. 1976) (citations and quotations omitted).

Lycoming asserts that the Peases have failed to offer any proof that the engine was defectively designed when it left its control. (Doc. 79, at 10). Lycoming attempts to analogize the facts of the instant case to those in Langford v. Gatlinburg Real Estate & Rental, Inc., 499 F. Supp. 2d 1042 (E.D. Tenn. 2007). In Langford, the plaintiff, Crystal Langford (“Langford”), alleged that her vacation home was destroyed by fire purportedly caused by a malfunctioning hot tub. The Langford court granted the hot tub manufacturer’s motion for summary judgment finding that the testimony of Langford’s expert was insufficient to create a genuine issue of material fact. Id. at 1052. The Langford court noted several deficiencies in the expert testimony including his inability to: (1) articulate precisely how the hot tub was defectively designed or manufactured; (2) identify particular component or

components that malfunctioned; (3) explain the hot tub's defective design; (4) or pinpoint the cause of fire. Id.

The instant case is entirely distinguishable from Langford. The Peases proffered two experts who squarely address the manner in which the AH1A engine was defectively designed. (See, e.g., Doc. 109, Ex. 2, at 29-33, 60-64; Doc. 111, Ex. 2, at 129-30, 160-68). Specifically, Sommer explicates the defective design of the cantilever aspect of the oil drain tank, observing that it was unnecessary and improper to “put the tank on the end of an overhung cantilever moment arm” and “support the tank only by way of a tube that acts as both a support and a drain to the bottom of the turbocharger.” (Doc. 109, Ex. 2, at 29). The experts have also identified the particular components that malfunctioned and were allegedly defective—the L-shaped oil drain tube and the oil drain tank itself—although they appear to disagree on whether the weld or the tube itself failed. (Compare Doc. 109, Ex. 2, at 29-31 with Doc. 111, Ex. 2, at 160). Nonetheless, the experts agree that the failure occurred as the result of the stress placed on the tube by the weight of the oil drain tank, exacerbated by excessive vibration. (Doc. 109, Ex. 2, at 29-30; Doc. 111, Ex. 2, at 8). This expert testimony is sufficient to create a genuine issue of material

fact regarding whether the AH1A engine was defective when it left Lycoming's control.²⁹

b. Whether the AH1A was Unreasonably Dangerous

Pursuant to the TPLA, a product is unreasonably dangerous when:

a product is dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics, or that the product because of its dangerous condition would not be put on the market by a reasonably prudent manufacturer or seller, assuming that the manufacturer or seller knew of its dangerous condition.

TENN. CODE ANN. § 29-28-102(8). The Tennessee Supreme Court has interpreted § 29-28-102(8) as incorporating two tests: the consumer expectation test and the prudent manufacturer test. Brown v. Crown Equip. Corp., 181 S.W.3d 268, 282 (Tenn. 2005) (citation omitted).

²⁹ In their response, the Peases reference service reports *pre-dating the sale of the AH1A engine* indicating problems with other TIO-540 engines including cracking and breaking of the turbocharger oil drain tank and a 2004 report detailing problems associated with vibration in the crankshaft of TIO-540 engines. (See Doc. 115, Ex. 7; Doc. 115, Ex. 9). At this juncture, the court is unable to ascertain the relevance of this evidence, and resolution of this evidentiary issue is reserved for trial.

In the instant case, only the prudent manufacturer test is applicable.³⁰ This test focuses on the "reasonableness of [a] manufacturer[‘s] or seller’s decision to market [a] product assuming knowledge of its dangerous condition" and not the expectations of buyers. Ray, 925 S.W.2d at 531. In Ray, the Tennessee Supreme Court noted that "a prudent manufacturer would consider usefulness, costs, seriousness and likelihood of potential harm, [the availability of a substitute product which would meet the same need and not be as unsafe,] and the myriad of other factors" when deciding whether to place a product into the stream of commerce. Id. at 532, 533 n.10 (citation omitted). Plaintiffs must use expert testimony to establish that the manufacturer or seller acted imprudently in placing the product in the stream of commerce. Id. at 531-32.

The Peases have presented sufficient evidence to rebut the presumption of § 29-28-104(a) and to create a factual dispute on the issue of whether a reasonably prudent manufacturer would have placed the AH1A engine into the stream of commerce despite knowledge of its dangerous condition. The 150-hour endurance

³⁰ The Peases are unable to satisfy the consumer expectation test. Under the consumer expectation test, a product is unreasonably dangerous if an ordinary consumer would not appreciate the condition of the product and the risk of injury. Ray, 925 S.W.2d at 530. To satisfy the test, the Peases must demonstrate the AH1A engine’s performance was "below reasonable minimum safety expectations of the ordinary consumer having ordinary, common knowledge as to its characteristics." Jackson v. General Motors Corp., 60 S.W.3d 800, 806 (Tenn. 2001). Suffice it to say that ordinary consumers do not have “reasonable minimum safety expectations” which touch upon the intricate characteristics of a turbocharged TIO-540-AH1A aircraft engine. See Ray, 925 S.W.2d at 531 (noting that the prudent manufacturer test will often be the only appropriate test in cases involving complex products). Hence, the consumer expectation test is inapplicable.

test of the AH1A engine revealed numerous problems with the engine. (Doc. 109, Ex. 2, at 74-75). Sommer observed that the AH1A stopped eight separate times as the result of failures of various components of the engine, *all* of which were linked to vibration. (Doc. 116, Ex. 11, at 12). Sommer noted, "[t]he engine is supposed to run for 200 hours before being overhauled and it wasn't even possible to get through the first 150." (Id.) Moreover, it is undisputed that Lycoming relied on vibration testing conducted on the TIO-540-SIAD engine twenty years before certification of the AH1A engine. (Doc. 105, Ex. 5, 149-53). The Peases allege that the AH1A engine and S1AD engine have substantially different engine designs. (Doc. 54, Ex. 1; Doc. 109, Ex. 2, at 132). Specifically, Sommer asserts that Lycoming redesigned the oil drain tank and relocated the turbocharger. (Doc. 116, Ex. 11, at 11). A reasonable jury may find that Lycoming acted imprudently when it placed the AH1A engine into the stream of commerce without additional vibration testing in light of purported differences in AH1A and S1AD engine design. In addition, subject to the court's ruling in Lycoming's motion in limine (Doc. 101), the Peases' experts may present evidence that Lycoming knew of common problems with the mounting of the turbocharger in the TIO-540 engines caused by excessive vibration. (See Doc. 115, Ex. 7). Accordingly, the court concludes that there remains a

genuine issue of material fact as to whether the AH1A engine was unreasonably dangerous when it left Lycoming's control.³¹

3. Proximate Causation

Under Tennessee law, a plaintiff must prove "that the unreasonably dangerous or defective condition of the product was the proximate cause of the injury." Cansler v. Grove Mfg. Co., 826 F.2d 1507, 1511 (6th Cir. 1987); see also King, 37 S.W.3d at 435. Lycoming contends that the Peases cannot prove proximate because (1) they cannot link the alleged design defect in the AH1A engine to Mr. Pease's plane crash and (2) Mr. Pease subjected the product to abnormal use. (Doc. 79, at 16-17). The court holds that genuine issues of material fact exist with respect to both issues.

a. Evidence of Causation

Lycoming asserts that the court should not give any weight to the "woefully inadequate" testimony of Sommer and Herlihy in light of the contradicting testimony presented by Lycoming's metallurgical experts. (Doc. 137, at 5-15). The court, however, must view the evidence in the light most favorable to the Peases

³¹ The court recognizes that neither Sommer or Herlihy present clear and precise opinions on the prudence of Lycoming's decision to place the AH1A engine into the stream of commerce. However, the court did not issue its order on the applicability of Tennessee law until March 11, 2011, after Sommer and Herlihy issued their expert reports and were deposed. (See Doc. 107). If the Peases intend to present evidence that the AH1A engine was unreasonably dangerous at trial, the court will grant the Peases leave to supplement their Rule 26 reports within thirty (30) days of this memorandum. Defendant shall be permitted an opportunity to rebut the same, and the experts may be subjected to supplemental depositions, confined to this narrow issue. The parties will be directed to meet and confer in an effort to address this pretrial issue without judicial intervention.

and holds that the Peases have proffered sufficient evidence to link the alleged design defect in the AH1A engine to the accident.

Both Sommer and Herlihy provided objective evidence to support their opinions that the accident was proximately caused by fatigue fracture. Herlihy noted that fatigue was clear from burnishing on the flange, and cooked oil on the outside of the flange and the bottom of the turbocharger. (Doc. 111, Ex. 2, at 162-63). Similarly, Sommer's examination of the flange revealed smearing, polishing and oil residue consistent with continued contact of the mating surfaces. According to Sommer, this evidence is entirely inconsistent with an overload fracture. (Doc. 109, Ex. 2, at 42-43). Although Sommer and Herlihy are not metallurgists, both possess substantial real-world experience investigating the cause of aviation accidents, adding credence to their opinions. (Doc. 109, Ex. 1 ¶ 3; Doc. 111, Ex. 1, at 1-2).

To refute Sommer and Herlihy, Lycoming relies³² primarily on the deposition of testimony of one of its experts, Gary J. Fowler, Ph.D ("Fowler"), who opined that the physical evidence from both a macroscopic and microscopic level indicated overload failure, not fatigue. (Doc. 136, Ex. G, at 102-06). The Peases note, however, that Fowler did not find any dimple rupture in the area where Sommer identified fracture smearing and only half of the fracture surface was

³² The deposition testimony of metallurgist Roch J. Shipley, Ph.D. ("Shipley") was not considered by the court. Lycoming did not identify Shipley as an expert in its pretrial disclosures, and therefore his opinion is inadmissible in the context of the pending Rule 56 motion. (See Doc. 144, at 1-2).

documented with the SEM. (Doc. 144, at 3 (citing Doc. 140, Ex. 2)). Indeed, Sommer's concession that "some of the fracture may have occurred due to impact" may be entirely consistent with Fowler's finding of dimple ruptures on the other areas of the fracture surface. (Doc. 109, Ex. 2, at 43; Doc. 140, Ex. 2). The court finds that the Peases have proffered sufficient evidence to create a genuine dispute of material fact regarding the proximate cause of Mr. Pease's crash. The credibility of these expert opinions is a question for the jury.

b. Abnormal Use

The TPLA provides that a manufacturer or seller is not liable if the product "was made unreasonably dangerous by subsequent unforeseeable alteration, change, improper maintenance or abnormal use." TENN. CODE ANN. § 29-28-108. Lycoming contends that Mr. Pease abnormally used the product by flying the plane despite seeing oil on the ground beneath the plane at the Asheville airport. (Doc. 79, at 18). Lycoming points to the pilot's kneeboard notes found in Mr. Pease's aircraft after the crash which lists "Symptoms" including: "blue smoke," "oil puddle" "a little sluggish?" (Doc. 116, Ex. 13). It is unclear from the record, however, whether the oil came from Mr. Pease's aircraft. (Doc. 116, Ex. 14, at 81-84). The size of the "oil puddle" is also unclear. (*Id.*) Assuming *arguendo* that Mr. Pease saw a significant amount of oil on the ground at the Asheville airport, and assuming that all of the oil came from his Piper aircraft, the factual issue of whether his misuse was foreseeable would remain. Accordingly, the court will deny this aspect of Lycoming's motion for summary judgment pursuant to the TPLA.

IV. Epilogue: Abdullah Redux

This case accentuates the inscrutability and limitations of Abdullah's *ratio decidendi* as applied to aviation products liability cases. The court has carefully examined Abdullah to determine whether the Abdullah panel sought only to preempt state standards of care in *operational* aviation cases. For the reasons set forth below, the court is compelled to conclude that Abdullah's sweeping language simply does not permit district courts to confine Abdullah to its facts.

The Abdullah decision held that federal law establishes the applicable standards of care in the field of “aviation safety,” preempting any state and territorial regulation. 181 F.3d at 365. Abdullah contains no limiting language which could reasonably be construed as restricting its holding to operational aviation cases. To the contrary, the Abdullah panel explicitly rejected the notion of preempting only discrete aspects of state and territorial air safety standards. Id.

Does federal law preempt the standards for air safety, but preserve State and Territorial damage remedies? We will answer both parts of this certified question with a “yes.” As to the first part of the question, contrary to courts that have found that federal law does not preempt state and territorial air safety standards, or that federal law only preempts discrete aspects thereof, we find implied federal preemption of the *entire field of aviation safety*.

Id. (emphasis added).

In its analysis, the Abdullah panel definitively states that “aviation safety” encompasses the safety of component parts, such as airplane engines. Specifically, the Abdullah court identifies Public Health Trust v. Lake Aircraft, Inc., 992 F.2d 291, 294-95 (11th Cir. 1993) and Cleveland v. Piper Aircraft Corp., 985 F.2d 1438,

1443-44 (10th Cir. 1993), two products liability cases, as decisions that incorrectly concluded “that the standards of care related to *aviation safety*” are not preempted by federal law. Id. at 372 (emphasis added). Had it intended a more narrow construction, the Third Circuit could have readily distinguished Public Health Trust and Cleveland from Abdullah by emphasizing the distinction between operational aviation cases and products liability. However, the Abdullah panel expressly disapproved the preemption analyses performed by the Tenth and Eleventh Circuits in Public Health Trust and Cleveland.³³ Id. at 372-75 (“We have a problem with applying the type of analysis employed in Cleveland to determine that there is no federal preemption of *aviation safety*” (emphasis added)). The Third Circuit explained that Congress enacted Section 44701 to allow the Administrator of the FAA to “exercise sole discretion in regulating air safety.” Id. at 369 (citing 49 U.S.C. § 44701(c)).³⁴ Section 44701(a) requires the Administrator of the FAA to “promote safe flight” by, *inter alia*, promulgating “minimum standards required in the interest of safety . . . for the design . . . of aircraft engines . . . and regulations and minimum standards for other practices, methods, and procedure the Administrator finds necessary for safety in air commerce . . .”). 49 U.S.C. § 44701(a). Viewed in this light, the Abdullah panel clearly intended the design and manufacture of

³³ The Third Circuit discussed Public Health Trust and Cleveland under the header “divergent authority.”

³⁴ Although Abdullah specifically cites Section 44701(c), the Third Circuit also refers to the Section 44701 generally. Id. (referring to “Chapter 447, Safety Regulation”); see also id. at 373-74.

aircraft and aircraft component to fall under the exclusive direction of federal safety regulations.

Subsequent developments in the law support our analysis. Three other districts courts have addressed the breadth of Abdullah's holding and each has held that Abdullah preempts state standards of care in aviation products liability cases. See Sikkelee, 731 F. Supp. 2d at 438-439; Landis, 2008 WL 728369, at *2, 4 (holding that Abdullah preempted the plaintiff's strict liability and negligence products liability claims against Boeing Company); Duvall, 2006 WL 1410794, at *2-3.

The Third Circuit also recently clarified Abdullah in Elassaad v. Independence Air, Inc., 613 F.3d 119 (3d Cir. 2010), where it explained that Abdullah "focused exclusively on safety while a plane is in the air, flying between its origin and destination." 613 F.3d at 127. The Elassaad court viewed Abdullah's preemption analysis as "limited to in-air safety." Id. at 127. Most importantly for purposes of the instant matter, however, and lest there be any doubt, the Elassaad court unequivocally stated that regulations detailing "certification and airworthiness requirements for aircraft parts" are associated with "flight." Id. at 128 (quotations omitted). The Third Circuit also noted that the Aviation Act directs the FAA to issue regulations to prescribe, *inter alia*, "standards for the construction and maintenance of aircraft" in keeping with two safety-related goals: (1) reducing accidents in air transportation and (2) promotion of safe flight of civil aircraft. Id. (citing 49 U.S.C. § 44701(a), (c)). This observation further demonstrates that the

Third Circuit’s definition of “air safety” litigation encapsulates aviation product liability cases.

With the benefit of hindsight, it is apparent that the Abdullah panel rigorously examined only those FAA regulations relevant to the specific facts of the case, to wit: those related to aircraft operation. Id. at 369. The court is loath to suggest that the Third Circuit did not anticipate the difficult issues, which necessarily flow from the preemption of state standards of care in aviation products liability cases. Yet, as Justice Frankfurter aptly observed, “[w]isdom too often never comes, and so one ought not to reject it merely because it comes late.” Henslee v. Union Planters Nat. Bank & Trust Co., 335 U.S. 595, 600 (1949) (Frankfurter, J., dissenting). *Stare decisis* is not a straitjacket that prohibits the Third Circuit from correcting manifest errors or unforeseen circumstances.³⁵ Duffy v. Barnes, 508 F.2d 205, 212 (3d Cir. 1974). The undersigned concludes that Abdullah fails in its application to aviation products liability cases, and for the followings reasons, it would be far more facile to employ the applicable state standards of care in aviation products liability cases.

First, FAA regulations relating to the design and manufacture of airplanes and airplane component parts were never intended to create federal standards of

³⁵ *Stare decisis* requires district courts to follow the binding precedent of higher courts. Hutto v. Davis, 454 U.S. 370, 375 (1982) (“[U]nless we wish anarchy to prevail within the federal judicial system, a precedent of this Court must be followed by the lower federal courts . . .”). Thus, the court cannot conduct its own field preemption analysis prior to the Third Circuit’s emasculation of Abdullah’s broad holding.

care.³⁶ The FAA promulgated the Civil Air Regulations and Federal Air Regulations referenced by the Peases³⁷ to set minimum standards for certification purposes, not for standards of care consonant with tort jurisprudence. See 49 U.S.C. § 44701; 14 C.F.R. § 33. (“This part prescribes airworthiness standards for the issue of type certificates and changes to those certificates, for aircraft engines.”). In Abdullah, the Third Circuit easily identified a general standard of care applicable to the operation of aircrafts by referencing an operational regulation. 181 F.3d at 374 (citing 14 C.F.R. § 91.13 (“No person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.”)). Employing familiar terms, FAR Part 91.13 essentially imposes a federal negligence standard of care for the operation of aircraft. See 14 C.F.R. § 91.13. Negligence jurisprudence is universally ensconced in personal injury litigation, and its principles can be applied by a jury with relative ease. In light of the specific facts of Abdullah, the Third Circuit was not compelled to scrutinize the myriad implications of applying *all* FAA safety regulations as “federal standards of care.”

In sharp contrast, construing and applying FAA safety regulations as federal standards of care in the case *sub judice* will be arduous and impractical. The applicable FAA regulations are acutely technical and often incurably vague. See,

³⁶ Neither the Peases nor Lycoming raised this argument in their briefs.

³⁷ The Peases allege four violations of the Civil Air Regulations (“CARs”)—13.200, 13.201, 13.103, and 13.151— and nine violations of the Federal Air Regulations (“FARs”)—21.3, 33.19, 33.33, 33.35, 33.4, 33.43, 33.49, 33.83, 145.221—as proximate cause of the plane crash and Mr. Pease’s injuries.

e.g., 14 C.F.R. § 33.25 (“The engine must operate *properly* with the accessory drive and mounting attachments loaded.” (emphasis added)). The court’s obligation to instruct the jury with these obscure regulations will be severely challenged, and there is no jurisprudential guidance to assist the court in formulating an intelligible statement of applicable law.³⁸

Moreover, Abdullah did not contemplate the interplay between FAA certification and federal preemption. Specifically, the Abdullah decision did not excogitate the impact of a type certificate on aviation products liability lawsuits for violations of *federal* standards of care. The Third Circuit carefully distinguished preempting federal standards of care from preempting state and territorial remedies, emphasizing that Congress did not intend to abolish state-law damage remedies. Abdullah, 181 F.3d at 375. Clearly, the Third Circuit did not intend the absurd result of immunizing airplane or airplane component part manufacturers from tort liability. At a minimum, the Third Circuit would have analyzed the limitations of the FAA’s certification process and societal implications before drastically curtailing the judicial remedies available to injured litigants. At the same time, it must be conceded that allowing aviation products liability suits applying federal standards of care to proceed against manufacturers who received a type certificate from the FAA creates some tension.

³⁸ To be clear, the court finds that the Abdullah panel identified the general standard of care promulgated in FAR Part 91.13 only to support its reasoning, not to limit the application of its holding to discrete aspects of the field of “aviation safety.”

The above discussion illustrates that Abdullah's *ratio decidendi* is simply overbroad. Abdullah applied a one-size-fits-all field preemption analysis, treating all cases encapsulated by the terms "air safety" or "aviation safety" as essentially identical. A comprehensive field preemption analysis may very well demonstrate that federal law preempts state standards in aviation products liability cases, but that remains to be seen. The issue of whether federal law preempts state standards of care in aviation products liability cases deserves individualized consideration based on the specific regulations promulgated by the FAA relating to the certification of airplanes and airplane component parts. The court strongly urges the Third Circuit to clarify Abdullah's application to aviation products liability cases or to limit Abdullah to its facts.

V. Conclusion

For the reasons set forth above, the court will grant in part and deny in part the Lycoming's motion (Doc. 52) for summary judgment based upon federal preemption grounds. The court will deny Lycoming's motions to exclude the expert testimony of Sommer and Herlihy (Docs. 65, 66) and Lycoming's motion (Doc. 67) for summary judgment pursuant to the Tennessee Products Liability Act of 1978.

An appropriate order follows.

S/ Christopher C. Conner
CHRISTOPHER C. CONNER
United States District Judge

Dated: December 19, 2011

**IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA**

DAVID H. PEASE, III and LISA PEASE,	:	CIVIL ACTION NO. 4:10-CV-00843
	:	
	:	(Judge Conner)
Plaintiffs	:	
	:	
v.	:	
	:	
LYCOMING ENGINES,	:	
	:	
Defendant	:	

ORDER

AND NOW, this 19th day of December, 2011, upon consideration of the motions for summary judgment (Docs. 52, 67) and motions to exclude the expert testimony of Colin Sommer and Douglas Herlihy (Docs. 65, 66) filed by Lycoming Engines, Inc. ("Lycoming"), and for the reasons set forth in the accompanying memorandum, it is hereby ORDERED that:

1. The motion (Doc. 65) to exclude the expert testimony of Colin Sommer is DENIED.
2. The motion (Doc. 66) to exclude the expert testimony of Douglas Herlihy is DENIED.
3. The motion (Doc. 52) for summary judgment based upon federal preemption grounds is GRANTED in part and DENIED in part as follows:
 - a. The motion is GRANTED with respect to the alleged violations of 14 C.F.R. §§ 21.3, 23.1013, 33.4, and 33.49.
 - b. The motion is DENIED in all other respects.
4. The motion (Doc. 67) for summary judgment pursuant to the Tennessee Products Liability Act of 1978 is DENIED.

5. The parties shall meet and confer to address the issue of supplemental Rule 26 reports and depositions.
6. The Clerk of Court is directed to defer entry of judgment until resolution of all issues.

S/ Christopher C. Conner
CHRISTOPHER C. CONNER
United States District Judge